PRIMERGY Econel 230R S1 Server

Options Guide

Edition May 2007

Comments… Suggestions… Corrections…

The User Documentation Department would like to know your opinion of this manual. Your feedback helps us optimize our documentation to suit your individual needs.

Feel free to send us your comments by e-mail to manuals@fujtsu-siemens.com.

Certified documentation according to DIN EN ISO 9001:2000

To ensure a consistently high quality standard and user-friendliness, this documentation was created to meet the regulations of a quality management system which complies with the requirements of the standard DIN EN ISO 9001:2000.

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1 Introduction

The PRIMERGY Econel 230R S1 server is an AMD-based server for small and medium-sized networks. The PRIMERGY Econel 230R S1 is the perfect choice for operational areas data centers, Internet- and application-hosting.

1.1 Overview of the documentation

PRIMERGY manuals are available in PDF format on the *ServerBooks* DVD. The *ServerBooks* DVD is part of the *ServerStart Suite* supplied with every server.

The PDF files of the manuals can also be downloaded free of charge from the Internet. The overview page showing the online documentation available on the Internet can be found using the URL: *http://manuals.fujitsu-siemens.com*. The PRIMERGY server documentation can be accessed using the *Industry standard servers* navigation option.

Concept and target groups

This Options Guide shows you how to extend and upgrade your server.

CAUTION!

The activities described in this manual may only be performed by technical specialists.

The installation and removal of the hot-plug components is described in the Operating Manual supplied with the server.

Additional documentation about the server

The PRIMERGY Econel 230R S1 documentation comprises the following additional manuals:

- "Safety notes and other important information" (print version delivered together with the system, PDF file available on the *ServerBooks* DVD)
- "Warranty" (print version delivered together with the system, PDF file available on the *ServerBooks* DVD)
- "Ergonomics" (PDF file available on the *ServerBooks* DVD)
- "Returning used devices" (PDF file available on the *ServerBooks* DVD)
- "Econel 230R S1 Server Operating Manual" (PDF file available on the *ServerBooks* DVD)

– Technical Manual for the system board D2440 (PDF file available on the *ServerBooks* DVD)
– "BIOS Setup" manual (PDF file available on the *ServerBooks* DVD)
– "PRIMERGY ServerView Suite" includes the ServerStart Disc 1 and 2, the *ServerBooks* DVD, the Software CD and the update CDs for Windows and Linux. The PDF version of the manual "PRIMERGY ServerView Suite - ServerStart" is also available on the *ServerBooks* DVD.

If you need a backup of the *ServerBooks* DVD, send the details of your server via email address:
Reklamat-PC-LOG@fujitsu-siemens.com.

– "LSI SATA Software RAID User's Guide" (PDF file available on the *ServerBooks* DVD)

Further sources of information:

– Technical Manual on the relevant rack
– Manual on the monitor
– Manual on *ServerView* Server Management
– Manual on *RemoteView* Remote Server Maintenance
– Documentation on boards and drives
– Documentation on your operating system
– Information files on your operating system

(see also "Related publications" on page 63)

1.2 Extensions and conversions

Second processor

The server can be upgraded to a so-called dual processor system. A dual processor system needs a multi processor operating system. The second processor must have the same type and clock rate as the first.

Extension of the main memory

Eight slots (4 banks with 2 modules) are available for the main memory. Each memory bank can be populated with 512 Mbyte, 1 Gbyte, 2 Gbyte or 4 Gbyte ECC DDR 2 SDRAM memory modules.

If the memory modules are populated in pairs, each pair must consist of identical memory modules (2-way interleaved mode).

Additional accessible drive

One 5.25-inch bay is available for accessible drives.

Additional non-hot-plug hard disk module (only non-hot-plug variant)

Up to six non-hot-plug hard disk modules can be installed.

Expansion boards in the PCI slots

The system board offers 1x PCI-Express x8 slot.

Additional the following slots are available by a riser card:

– 1 x PCI Express x8 slot, 1 x PCI Express x4 slot and 1 x PCI-X (64 Bit / 66 MHz, ZCR) slot.

1.3 Notational conventions

The following notational conventions are used in this manual:

Text in italics	indicates commands, menu items or software programs.
“Quotation marks”	indicate names of chapters and terms that are being emphasized.
►	describes activities that must be performed in the order shown.
CAUTION!	pay particular attention to texts marked with this symbol. Failure to observe this warning may endanger your life, destroy the system or lead to the loss of data.
	indicates additional information, notes and tips.

2 Procedure

CAUTION!

- The actions described in this manual should only be performed by technical specialists.
- Equipment repairs should only be performed by service personnel.
- Any unauthorized opening and improper repairs could expose the user to risks (electric shock, energy hazards, fire hazards) and could also damage the equipment.
- Any unauthorized opening of the device will result in the invalidation of the warranty and exclusion from all liability.

► First of all please familiarize yourself with the safety instructions in the section chapter “Safety notes” on page 11 et seq. .

► Ensure that all required manuals (see “Additional documentation about the server” on page 5) are available, printing out the PDF files if necessary. You will definitely need the Operating Manual for the server and the Technical Manual for the system board.

► Shut down the server correctly, switch it off, pull out the power plug(s), and open the server as described in the chapter “Preparation” on page 17 et seq. .

► Extend or upgrade your server as described in the relevant chapter.

The Operating Manual for the server describes how you install/remove the hot-plug components.

► Close the server, connect it to the power outlet, and switch it on as described in the chapter “Completion” on page 49 et seq. .

► Start the operating system and, if necessary, configure it as required (see the Operating Manual).

3 Safety notes

The following safety instructions are also provided in the manual “Safety notes and other important information”.

This device complies with the relevant safety regulations for data processing equipment. If you have any questions about where you can set up the device, contact your sales outlet or our customer service team.

CAUTION!

- The actions described in this manual should only be performed by technical specialists.
- Equipment repairs should only be performed by service personnel.
- Any unauthorized opening and improper repairs could expose the user to risks (electric shock, energy hazards, fire hazards) and could also damage the equipment.
- Any unauthorized opening of the device will result in the invalidation of the warranty and exclusion from all liability.

Before starting up

CAUTION!

- During installation and before operating the device, observe the instructions on environmental conditions for your device.
- If the device is brought in from a cold environment, condensation may form both inside and on the outside of the device.

  Wait until the device has acclimatized to room temperature and is absolutely dry before starting it up. Material damage may be caused to the device if this requirement is not observed.
- Transport the device only in the original packaging or in packaging that protects it from knocks and jolts.

Installation and operation

CAUTION!

- If the device is integrated in an installation that receives power from an industrial (public) power supply network with the IEC309 connector, the (public) power supply protection must comply with the requirements for the non-industrial (public) power supply networks for the type A connector.
- The device automatically sets itself to a voltage in the range of 100 V -127 V oder 200 V - 240 V. Make sure that your local voltage is within this range.
- This device has a specially approved power cable and must only be connected to a safety socket on the rack mains socket strip.
- The ON/OFF button does not disconnect the device from the mains voltage. To completely disconnect it from the mains voltage, remove the power plug from the safety socket.
- Always connect the device and the attached peripherals to the same power circuit. Otherwise you run the risk of losing data if, for example, the server is still operating but the peripheral device (e.g. storage subsystem) has failed during a power outage.
- Take notice that the data cables to peripheral devices are adequately shielded.
- To the LAN wiring the requirements apply in accordance with the standards EN 50173 and EN 50174-1/2. As minimum requirement the use of a protected LAN line of category 5 for 10/100 MBps Ethernet, and/or of category 5e for Gigabit Ethernet is considered. The requirements of the specification ISO/IEC 11801 are to be considered.
- Route the cables in such a way that they do not form a potential hazard and that they cannot be damaged. When connecting up a device, refer to the relevant notes in this manual.
- Never connect or disconnect data transmission lines during a storm (lightning hazard).

CAUTION!

- Make sure that no objects (such as bracelets or paper clips) fall into or liquids spill into the device (risc of electric shock or short circuit).
- In emergencies (e.g. damaged casing, controls or cables, penetration of liquids or foreign matter), switch off the device immediately, remove the power plug from the safety socket and contact your sales outlet or customer service team.
- Proper operation of the device (in accordance with IEC 60950-1/ EN 60950-1) is only ensured if the casing is completely assembled and the rear covers for the installation openings have been put in place (electric shock, cooling, fire protection, interference suppression).
- Only install system expansions that satisfy the requirements and rules governing safety and electromagnetic compatibility and relating to telecommunications terminal equipment. If you install other expansions, you may damage the system or violate the safety regulations and regulations governing RFI suppression. Information on which system expansions are suitable can be obtained from the customer service centre or your sales outlet.
- The components or parts marked with a warning label (e.g. lightning symbol) may only be opened, removed or exchanged by authorized, qualified personnel.
- The warranty expires if the device is damaged during the installation or replacement of system expansions.
- You may only set those resolutions and refresh rates specified in the operating manual of the monitor. Otherwise, you may damage your monitor. If you are in any doubt, contact your sales outlet or customer service centre.

Batteries

CAUTION!

- Incorrect replacement of batteries may lead to a risk of explosion. The batteries may only be replaced with identical batteries or with a type recommended by the manufacturer (see the technical manual for the system board under “Related publications” on page 63).
- Replace the lithium battery on the system board in accordance with the instructions in the technical manual for the system board (see “Related publications” on page 63).

Working with CDs/DVDs and CD/DVD drives

When working with devices with CD/DVD drives, these instructions must be followed.

CAUTION!

- Only use CDs/DVDs that are in perfect condition in your server's CD/DVD drive, in order to prevent data loss, equipment damage and injury.
- Check each CD/DVD for damage, cracks, breakages etc. before inserting it in the drive.

  Note that any additional labels applied may change the mechanical properties of a CD/DVD and cause imbalance.

  Damaged and imbalanced CDs/DVDs can break at high drive speeds (data loss).

  Under certain circumstances, sharp CD/DVD fragments can pierce the cover of the CD/DVD drive (equipment damage) and can fly out of the device (danger of injury, particularly to uncovered body parts such as the face or neck).

You can prevent mechanical damage and damage to the CD/DVD drive, as well as premature CD/DVD wear, by observing the following suggestions:

- Only insert CDs/DVDs in the drive when needed and remove them after use.
- Store the CDs/DVDs in suitable sleeves.
- Protect the CDs/DVDs from exposure to heat and direct sunlight.

Laser information

The CD/DVD drive complies with IEC 60825-1 laser class 1.

CAUTION!

The CD/DVD drive contains a light-emitting diode (LED), which under certain circumstances produces a laser beam stronger than laser class 1. Looking directly at this beam is dangerous.

Never remove parts of the CD/DVD drive casing!

Modules with electrostatic-sensitive components

Systems and components that might be damaged by electrostatic discharge (ESD) are marked with the following label:

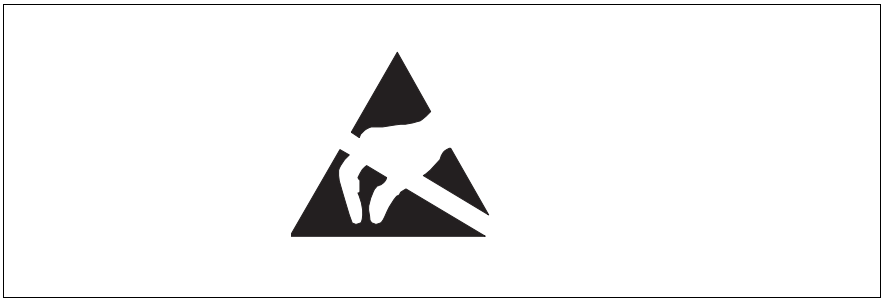

Figure 1: ESD label

When you handle components fitted with ESDs, you must observe the following points under all circumstances:

- Remove the power plug before installing or removing components containing ESDs.
- You must always discharge yourself of static charges (e.g. by touching a grounded object) before working.
- The equipment and tools you use must be free of static charges.
- Only touch the components at the positions highlighted in green (touch points).
- Do not touch any exposed pins or conductors on a component.
- Use a grounding cable designed for this purpose to connect yourself to the system unit as you install components.

- Place all components on a static-safe base.

You will find a detailed description for handling ESD components in the relevant European or international standards (DIN EN 61340-5-1, ANSI/ESD S20.20).

4 Preparation

CAUTION!

Observe the safety instructions in the chapter “Safety notes” on page 11 et seq. .

4.1 Opening the server

- Terminate all applications and shut down the server correctly.
- If your operating system has not switched off the server, press the on/off button.
- Pull all power connectors out of the safety sockets.
- Disconnect all cables on the rear of the server.

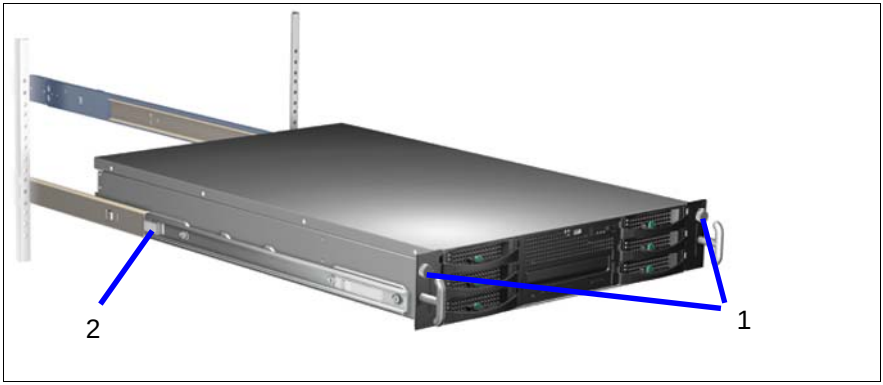

Figure 2: Pulling the server out of the rack

- Loosen the two knurled screws (1) and pull the server as far as possible out of the rack.
- Push the safety springs (2) on both sides and carefully pull the server outward.
- Pull the server out of the rails and place it on a table, for example.

Figure 3: Loosening the screws

- ► Unlock the top cover by removing the knurled screw at the rear side.
- ► Pull the top cover approxiate 2 cm frontward using the handle.
- ► Remove the top cover.

4.2 Removing the air duct

► Remove the top cover as described in section “Opening the server” on page 17.

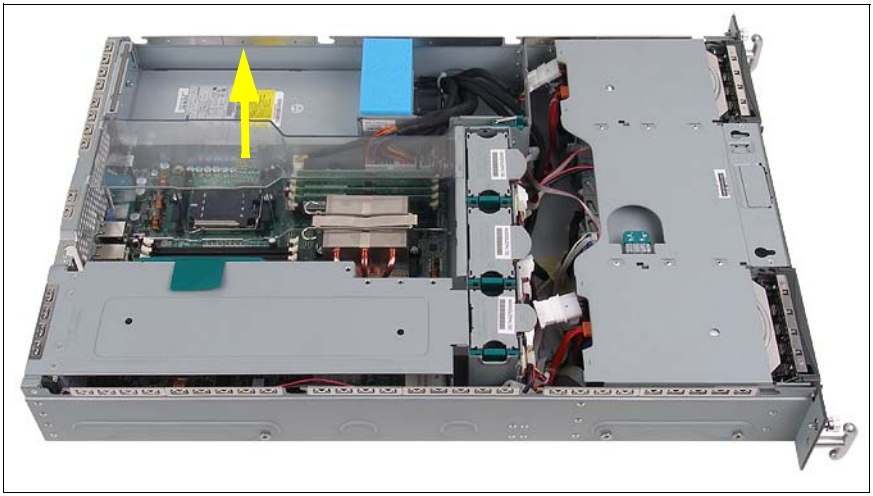

Figure 4: Removing the air duct

► Take out the air duct.

5 Processors

CAUTION!

Observe the safety instructions in the chapter “Safety notes” on page 11 et seq. .

CAUTION!

Processors are components which are extremely sensitive to electrostatic discharges and must be handled with caution. After taking a processor out of its protective wrapper, set it on an insulated antistatic surface with the smooth side down. Never slide a processor over a surface.

5.1 Installing a second processor

The system board can be upgraded with a second processor. The upgrade kit includes a processor and a heat sink.

CAUTION!

You may only use processors of the same type on the system board. The second processor must have the same type and clock rate as the first. Use a suitable multiprocessor operating system if dual operation is required.

- Remove the top cover as described in section “Opening the server” on page 17.
- Remove the air duct as described in section “Removing the air duct” on page 19.

Installing the processor

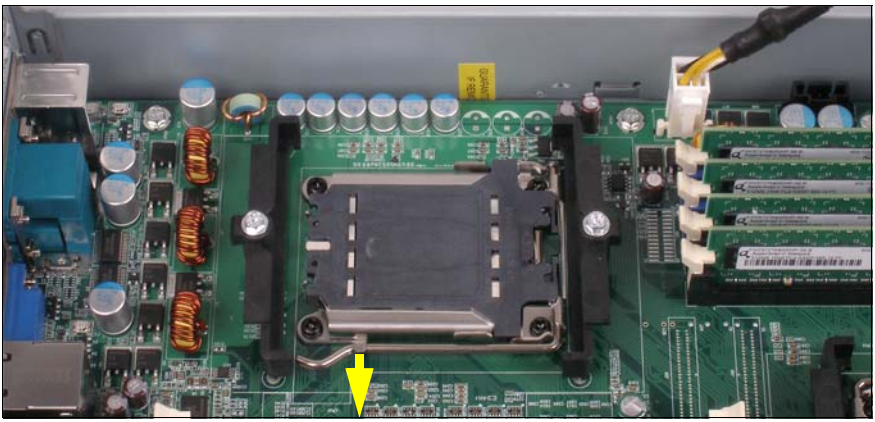

Figure 5: Releasing the socket lever

► Release the socket lever by pressing it downward and pull it upward until it stops.

Figure 6: Removing the protection cover

► Remove the protection cover.

Figure 7: Opening the processor holder

- ► Open the processor holder.
- ► Take out the processor from its protective wrapper.

Figure 8: Inserting the processor

- ► Position the new processor over the socket, and insert it carefully into the socket.

CAUTION!

The processor can only be installed in one particular direction. Pay attention to the location mark on one of the corners and the recesses at the sides. Do not use force to press it into the socket to avoid damaging the pins or the processor.

Figure 9: Closing the processor holder

► Close the processor holder.

Figure 10: Locking the socket lever

► Lock the processor into place in the socket by placing the socket lever in its original position.

Installing the heat sink

► Remove the protective cover on the underside of the heat sink.

Figure 11: Installing the heat sink

► Place the heat sink onto the processor socket as shown in the figure. Otherwise it is not possible to insert the air duct in the right way.

Figure 12: Hooking the clamp at the right side

► Set the clamp on the heat sink and hook it on the distance holder at the right side.

Figure 13: Hooking the clamp at the left side

► Hook the clamp on the distance holder at the left side.

Figure 14: Engaging the locking lever

► Press the two springs of the locking lever first somewhat outside and then downward until they engage.

CAUTION!

Never operate a processor without heat sink or without processor fan as otherwise the processor may overheat and fail, causing the complete system board to fail.

► Install the air duct as described in section “Inserting the air duct” on page 49.

► Close the server, connect it to the mains, and switch it on as described in section “Closing the server” on page 50 et seq. .

6 Main memory

CAUTION!

Observe the safety instructions in the chapter “Safety notes” on page 11 et seq. .

The system board supports up to 32 Gbytes of main memory. Eight slots (4 banks with 2 modules) are available for the main memory. Each memory bank can be populated with 512 Mbyte, 1 Gbyte, 2 Gbyte or 4 Gbyte ECC DDR 2 SDRAM memory modules.

6.1 Equipping rules

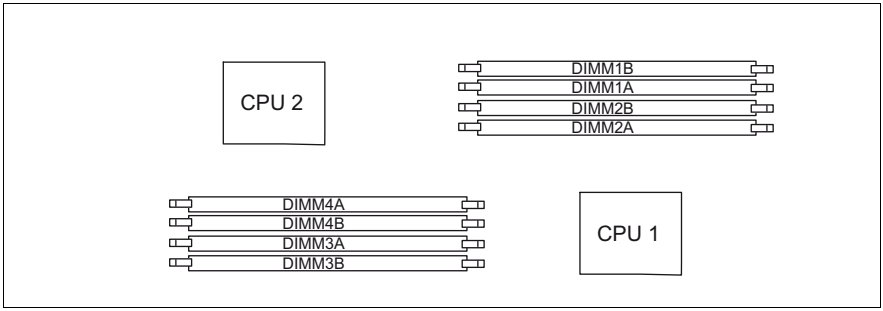

Figure 15: Structure of the main memory

– If the memory modules are populated in pairs, each pair must consist of identical memory modules (2-way interleaved mode)

– The module capacity between pairs can differ: pair 2A/2B can be populated with two 512 Mbyte modules and pair 1A/1B with two 1 Gbyte modules.

– CPU 2 must be installed to access DIMM3A/3B and DIMM4A/4B.

The table below shows the order in which the memory banks must be populated:

	DIMM 2A	**DIMM 2B**	**DIMM 1A**	**DIMM 1B**
2 DIMMs	empty	empty	populated	populated
4 DIMMs	populated	populated	populated	populated
	CPU 1			

	DIMM 2A	**DIMM 2B**	**DIMM 1A**	**DIMM 1B**	**DIMM 4A**	**DIMM 4B**	**DIMM 3A**	**DIMM 3B**
4 DIMMs	empty	empty	populated	populated	empty	empty	populated	populated
8 DIMMs	populated	populated	populated	populated	populated	populated	populated	populated
	CPU 1				CPU 2			

6.2 Extending/replacing the main memory

- Open the server as described in the chapter “Preparation” on page 17 et seq. .

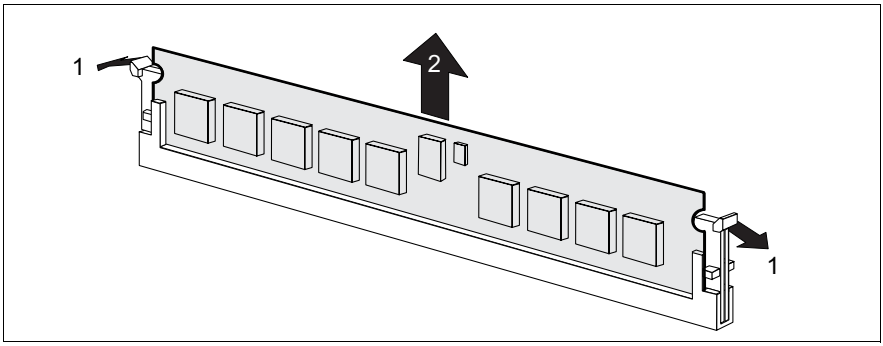

Figure 16: Removing a memory module

- Press the holders on either side of the mounting location concerned outward (1).

► If the mounting location was already equipped: pull the memory module out of the mounting location (2).

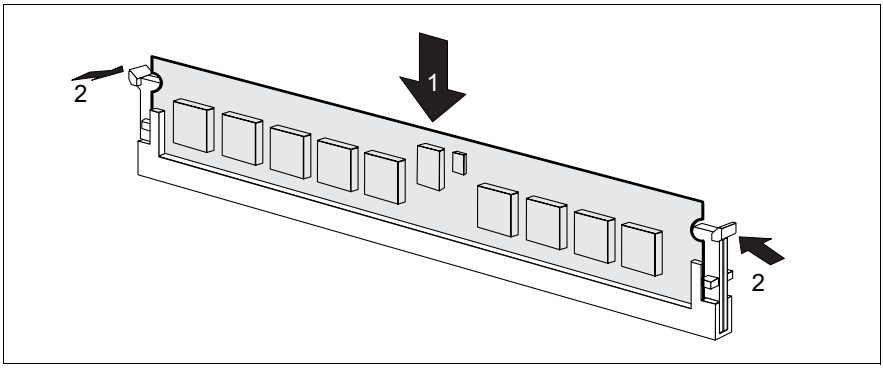

Figure 17: Inserting a memory module

► Press the holders on either side of the mounting location concerned outward.

► Insert the memory module in the mounting location (1) until the holders at the sides engage (2).

► Close the server, connect it to the power outlet, and switch it on as described in the chapter “Completion” on page 49 et seq. .

7 Accessible drives

CAUTION!

Observe the safety instructions in the chapter “Safety notes” on page 11 et seq. .

7.1 Installing an accessible 5.25-inch drive

One 5.25-inch bay is available for accessible drives. The 5.25-inch drives available are DVD-ROM, DVD-RW and tape drives. These drives can be installed in the free 5.25-inch bay.

For installing a tape drive you need an additional SCSI controller because there is no onboard SCSI controller on the system board.

- Open the server as described in the chapter “Preparation” on page 17et seq. .

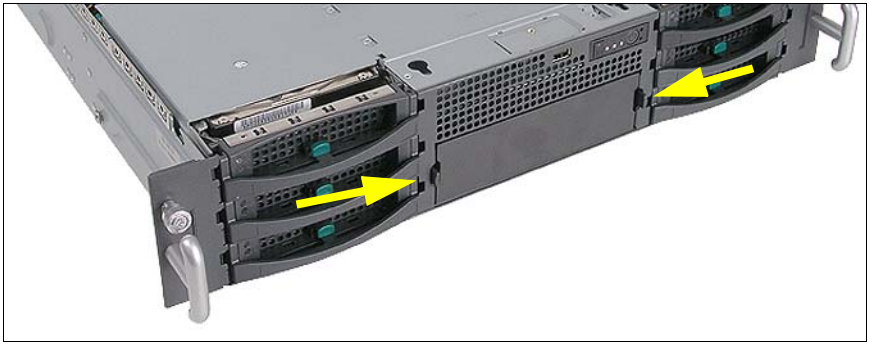

Figure 18: Removing the dummy cover

- Press the two locking levers of the dummy cover in direction of the arrows and pull the dummy cover out of the bay.

CAUTION!

Keep the dummy cover for future use. If you remove the accessible drive again and do not replace it with a new one, the dummy cover must be reinstalled to comply with EMC regulations and to satisfy cooling requirements and fire protection measures.

► Attach two guidance pins to the 5.25-inch drive.

i You will find a sac with the guidance pins in the drive's bay. Otherwise remove the guidance pins from the dummy cover.

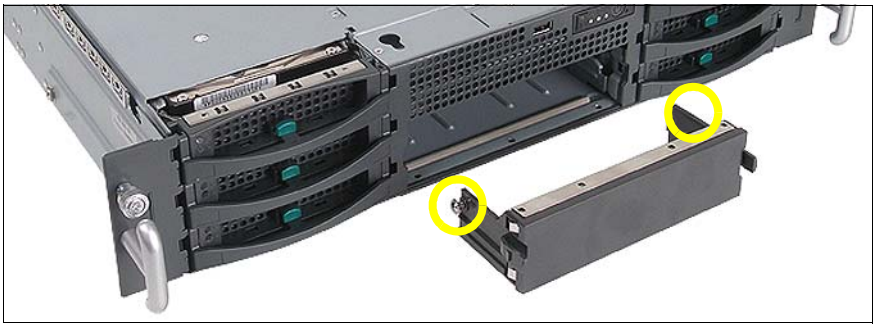

Figure 19: Removing the guidance pins from the dummy cover

► For installing a tape drive: install the SCSI controller in a PCI slot of the riser card as described in section "Installing in PCI slots of the riser card" on page 43.

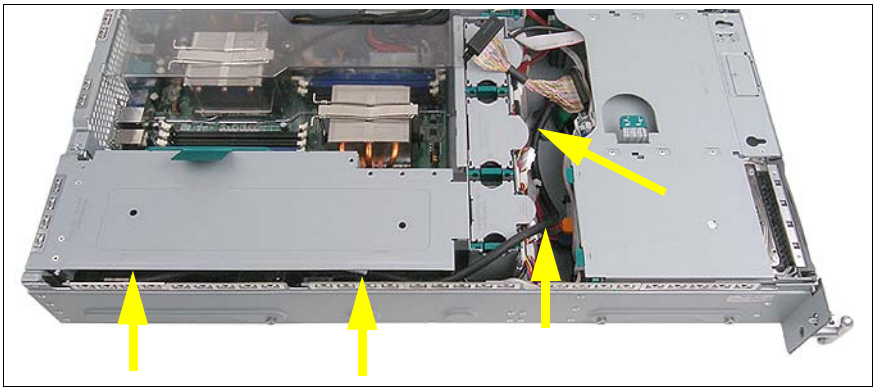

Figure 20: Routing SCSI cable

► For installing a tape drive: route the SCSI cable as shown in the photo.

Figure 21: Unlocking the bay

- ► Pull up the locking lever of the bay.
- ► Push the 5.25-inch drive into the bay until it is aligned to the server front side.

Figure 22: Locking the bay

- ► Push down the locking lever of the bay until it engages.
- ► Connect the data cable to the 5.25-inch drive (see the cabling plans in the Appendix).
- ► Connect the power cable to the 5.25-inch drive (see the cabling plans in the Appendix).
- ► Close the server, connect it to the power outlet, and switch it on as described in the chapter “Completion” on page 49 et seq. .

8 Non-hot-plug hard disk modules

CAUTION!

Observe the safety instructions in the chapter “Safety notes” on page 11 et seq. .

8.1 Installing non-hot-plug hard disk modules

► Remove the top cover as described in section “Opening the server” on page 17.

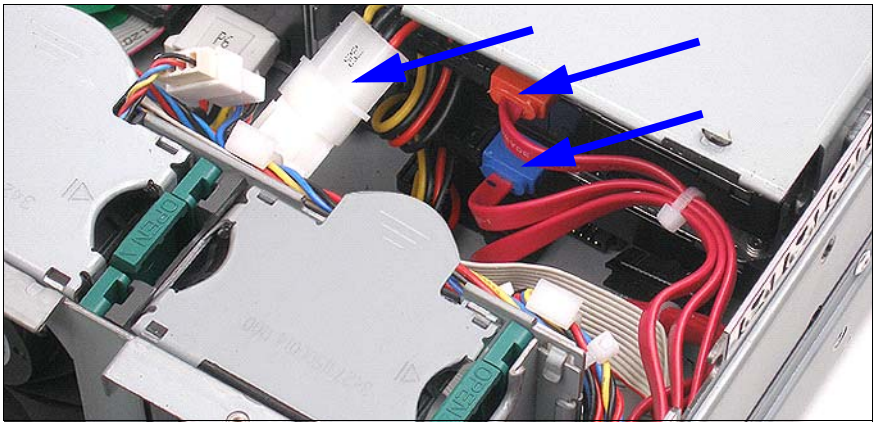

Figure 23: Removing the cables

► Remove the plugs of the SATA cables from the already installed hard disk modules.

► Remove the plug of the power adapter cable from the power cable.

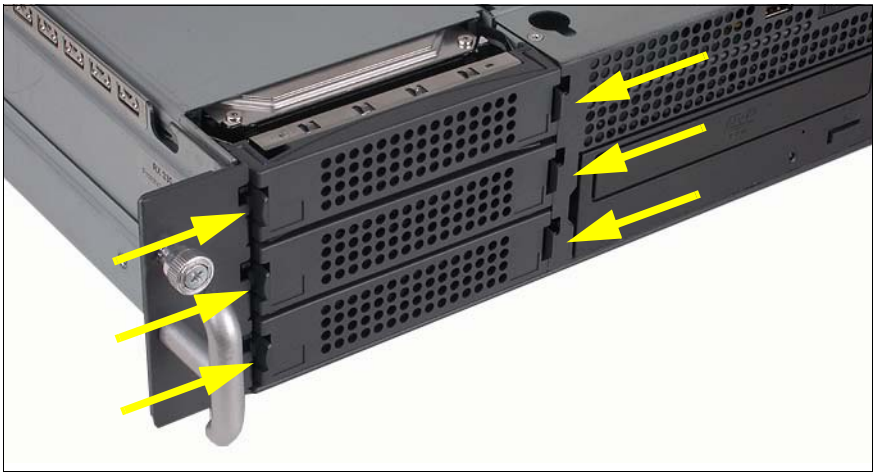

Figure 24: Removing the hard disk modules and the dummy cover

- Remove the hard disk modules and the dummy cover together from the bay. Therefore press the two locking levers of the hard disk module/dummy cover in direction of the arrows and pull the hard disk module/dummy cover out of the bay.

The hard disk modules are connected by the power adapter cable (see figure 25 on page 39).

- Replace the dummy cover by a hard disk module.

CAUTION!

Keep the dummy cover for future use. If you remove the hard disk module again and do not replace it with a new one, the dummy cover must be reinstalled to comply with EMC regulations and to satisfy cooling requirements and fire protection measures.

Figure 25: Connecting the power adapter cable

► Connect the plugs of the power adapter cable to the hard disk modules. The lowest power plug remains disconnected if only two hard disk modules will be installed.

Figure 26: Inserting the hard disk modules

- ► Push the hard disk modules together into the bay until they engage.
- ► Connect the plugs of the SATA cables to the hard disk modules (see the cabling plans in the Appendix). If only two hard disk modules will be installed the black respectively the red SATA plug remains disconnected.

	color of the SATA plug	color of the SATA plug
position hard disk module	front left side	front right side
top	orange (SAS1)	orange (SAS4)
middle	blue (SAS2)	blue (SAS5)
bottom	black (SAS3)	black (SAS6)

- ► Connect the plug of the power adapter cable to the power cable (see figure 23 on page 37).
- ► Close the server, connect it to the mains, and switch it on as described in section “Closing the server” on page 50 et seq. .

9 Expansion boards in the PCI slots

CAUTION!

Observe the safety instructions in the chapter “Safety notes” on page 11 et seq. .

The system board offers 1x PCI-Express x8 slot.

Additional the following slots are available by a riser card:

– 1 x PCI Express x8 slot, 1 x PCI Express x4 slot and 1 x PCI-X (64 Bit / 66 MHz, ZCR) slot

9.1 Installing an expansion board

Installing in PCI-Express x8 slot of the system board

- ► Open the server as described in the chapter “Preparation” on page 17 et seq. .
- ► Please read the documentation supplied with the expansion board.
- ► If necessary, connect cables onto the expansion board.

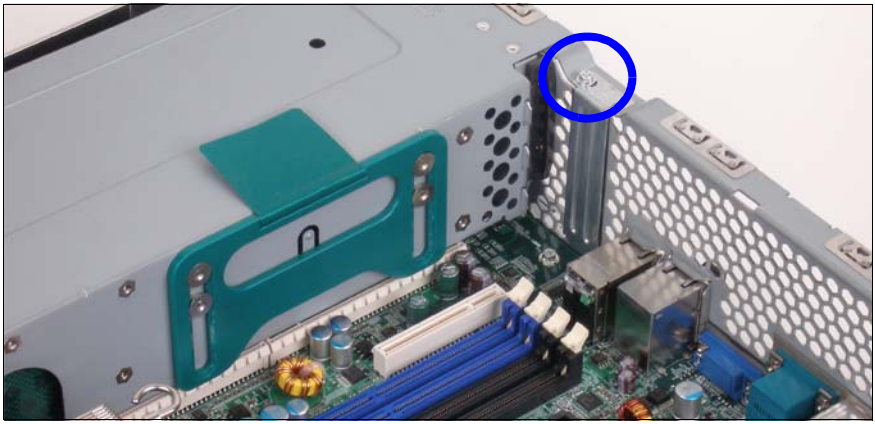

Figure 27: Removing the screw

- ► Remove the screw.

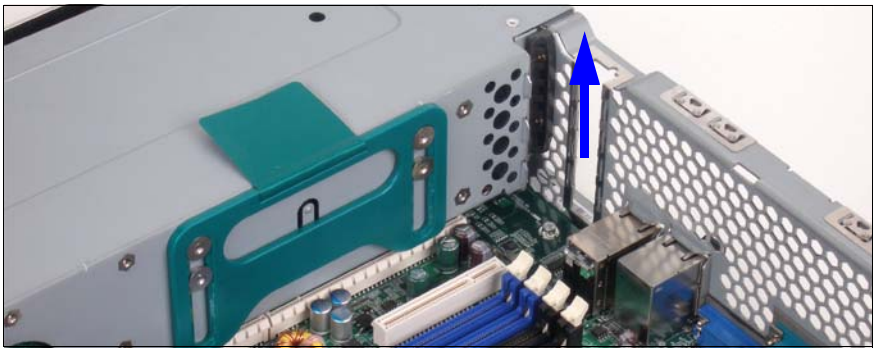

Figure 28: Removing the PCI slot's rear cover

► Remove the PCI slot's rear cover.

CAUTION!

Keep the rear cover of the PCI slot for future use. If you remove the expansion board again and do not replace it with a new one, the rear cover must be reinstalled to comply with EMC regulations and to satisfy cooling requirements and fire protection measures.

Figure 29: Removing the PCI slot's rear cover

► Install the expansion board in the PCI slot of the system board. Make sure that the rear of the expansion board's slot cover is positioned in the intended recess.

- ► Fasten the expansion board's rear cover with the screw.
- ► If required, connect the cables to the system board or other components.
- ► Close the server, connect it to the power outlet, and switch it on as described in the chapter "Completion" on page 49 et seq. .

Installing in PCI slots of the riser card

- ► Open the server as described in the chapter "Preparation" on page 17 et seq. .
- ► Remove all external cables being connected to installed expansion boards.

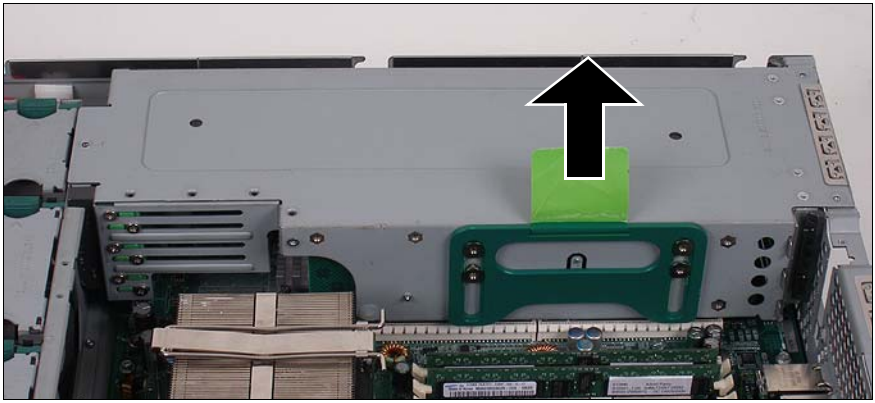

Figure 30: Pulling up the label

- ► Pull up the green handle of the riser card holder using the label.

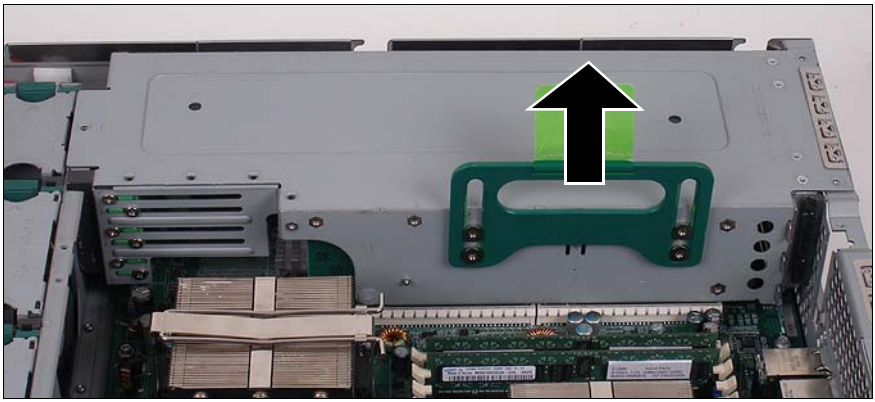

Figure 31: Removing the riser card holder

- ► Take the riser card holder straight upward out of the housing using the green handle.
- ► Please read the documentation supplied with the expansion board.
- ► If necessary, connect cables onto the expansion board.

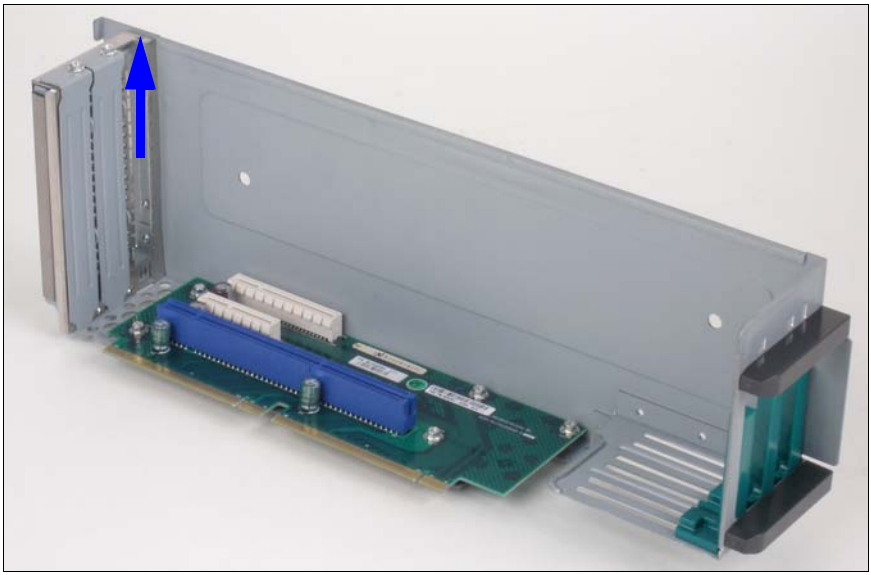

Figure 32: Removing the rear cover

► Remove the screw and pull out the PCI slot's rear cover.

CAUTION!

Keep the rear cover of the PCI slot for future use. If you remove the expansion board again and do not replace it with a new one, the rear cover must be reinstalled to comply with EMC regulations and to satisfy cooling requirements and fire protection measures.

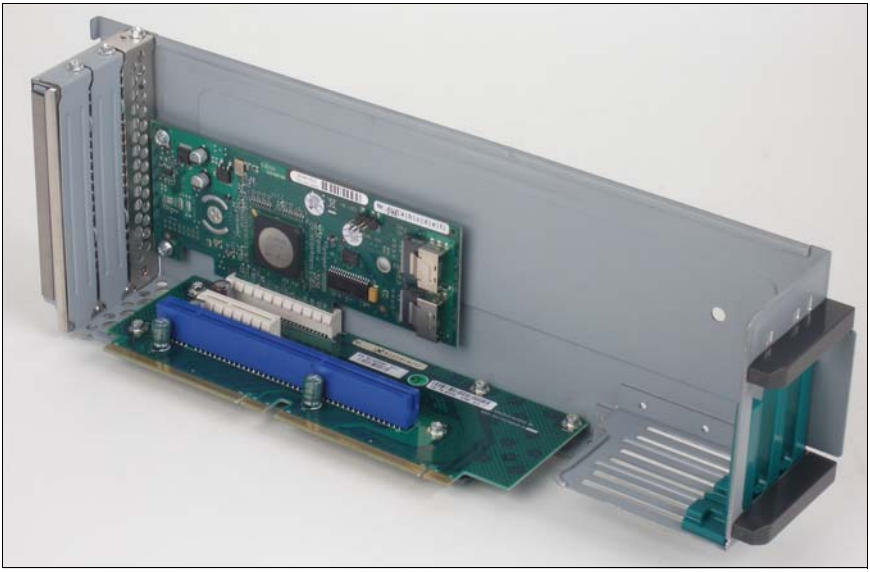

Figure 33: Installing the expansion board

- Install the expansion board in the PCI slot of the riser card. Make sure that the rear of the expansion board's slot cover is positioned in the intended recess.
- Fasten the expansion board's slot cover with the screw.

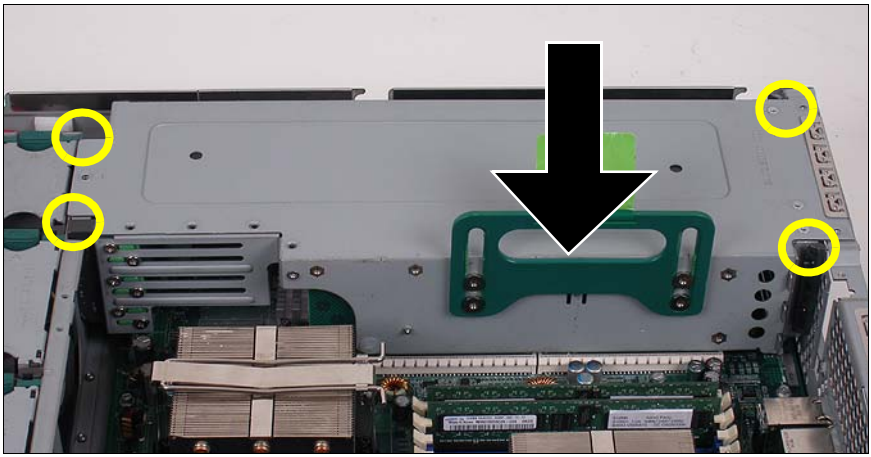

Figure 34: Installing the riser card holder

- Insert the riser card holder into the guidances (right side) and recesses (left side) of the chassis.
- Push the riser card into the PCI slot of the system board.
- If required, connect the cables to the system board or other components.
- Close the server, connect it to the power outlet, and switch it on as described in the chapter “Completion” on page 49 et seq. .

10 Completion

CAUTION!

Observe the safety instructions in the chapter “Safety notes” on page 11 et seq. .

10.1 Inserting the air duct

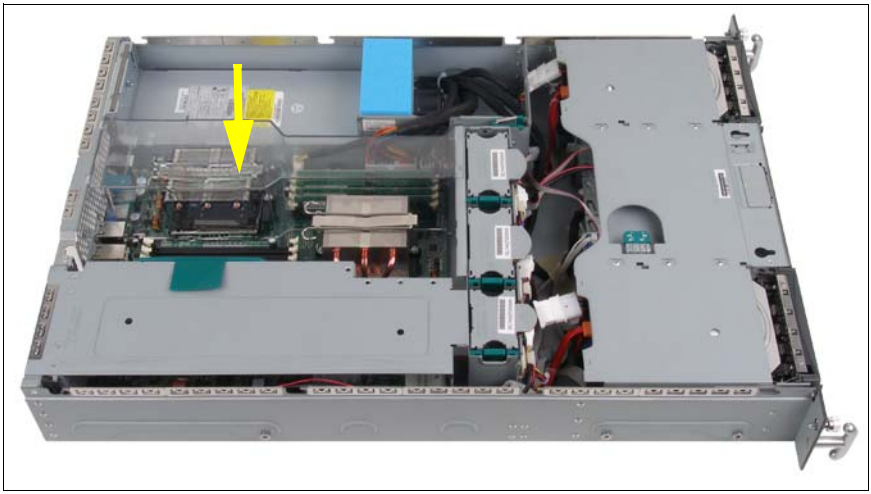

Figure 35: Inserting the air duct

► Insert the air duct.

10.2 Closing the server

Figure 36: Attaching the top cover

- ► Position the top cover in such a way that it protrudes approxiate 2 cm at the rear.
- ► Push the top cover all the way in direction to the front side.
- ► Fasten the top cover with the knurled screw.

If you have not removed the server from the rack cabinet, please skip this page.

- ► Push the server from the front side in the extended telescopic rails.
- ► Reconnect all the cables you disconnected beforehand on the rear of the server.

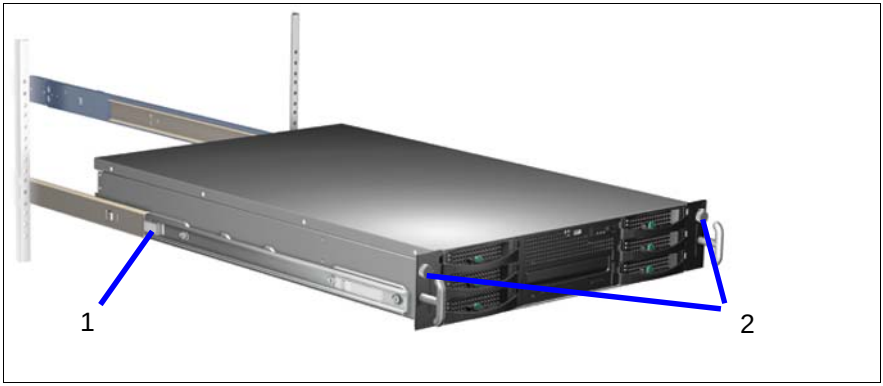

Figure 37: Installing the server in a rack cabinet

- ► Press in the safety springs (1) on both sides and push the server as far as it will go into the rack.
- ► Fasten the server in the rack using the two knurled screws (2).
- ► Connect all power plugs to the safety sockets.
- ► Press the on/off button to start up the server.

11 Appendix

11.1 Cabling

The following table gives you an overview of the cables:

Cable no *	Part number	Item number	Designation	Length
1		A3C40085575	SATA cable - SATA 6 (black/black)	580 mm
2		A3C40085575	SATA cable - SATA 5 (blue/blue)	580 mm
3		A3C40085575	SATA cable - SATA 4 (orange/orange)	580 mm
4		A3C40085588	SATA cable - SATA 3 (green/blue)	320 mm
5		A3C40085588	SATA cable - SATA 2 (red/black)	320 mm
6		A3C40085588	SATA cable - SATA 1 (yellow/orange)	320 mm
7		A3C40085681	Backplane I^2C cable (left side)	380 mm
8		A3C40085657	Backplane I^2C cable (right side)	730 mm
9		A3C40085686	IDtemp cable	
10		A3C40085684	CD-/DVD-ROM cable	
11		A3C40085685	USB cable	
12		A3C40085682	Front panel cable	
13		A3C40085683	Fan extension cable	
14		A3C40085687	Intrusion switch cable	300 mm

*refers to the drawings of the cabling

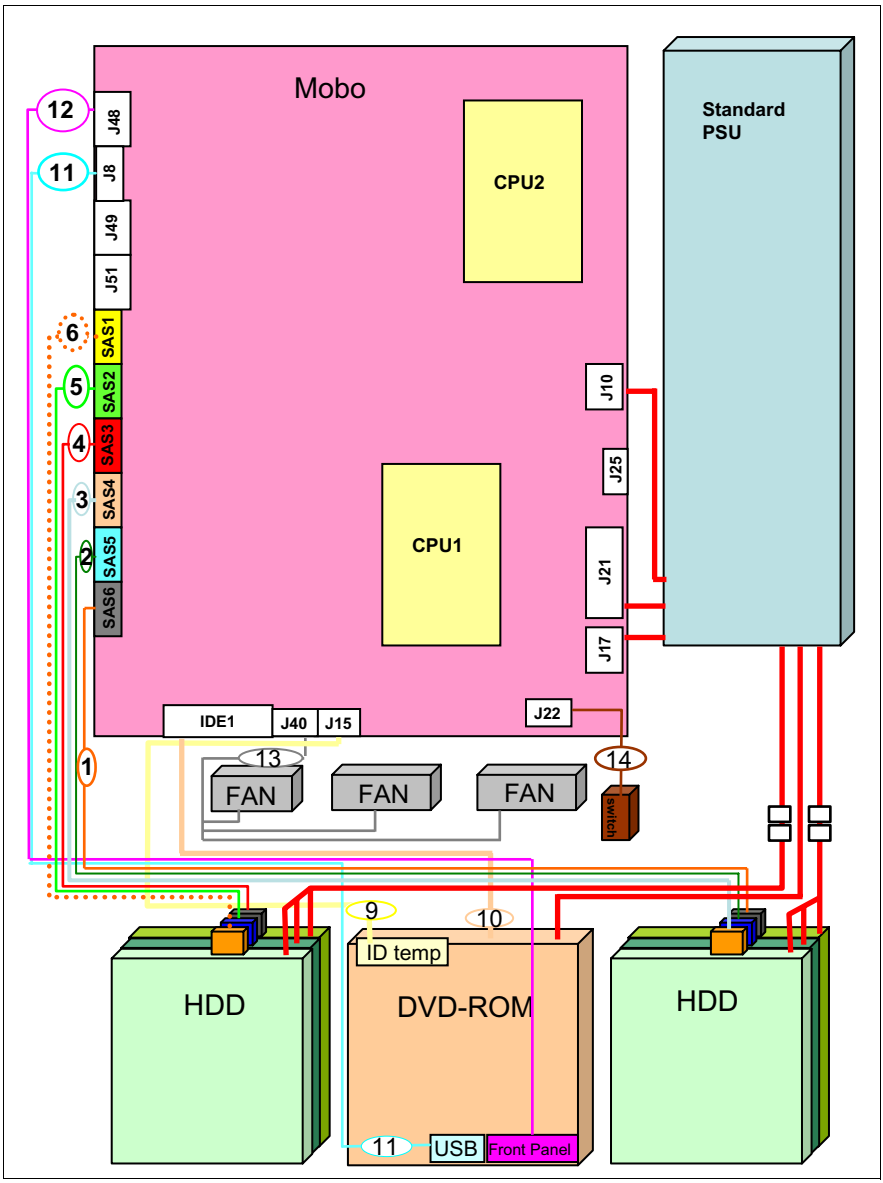

Figure 38: Cabling non-hot-plug

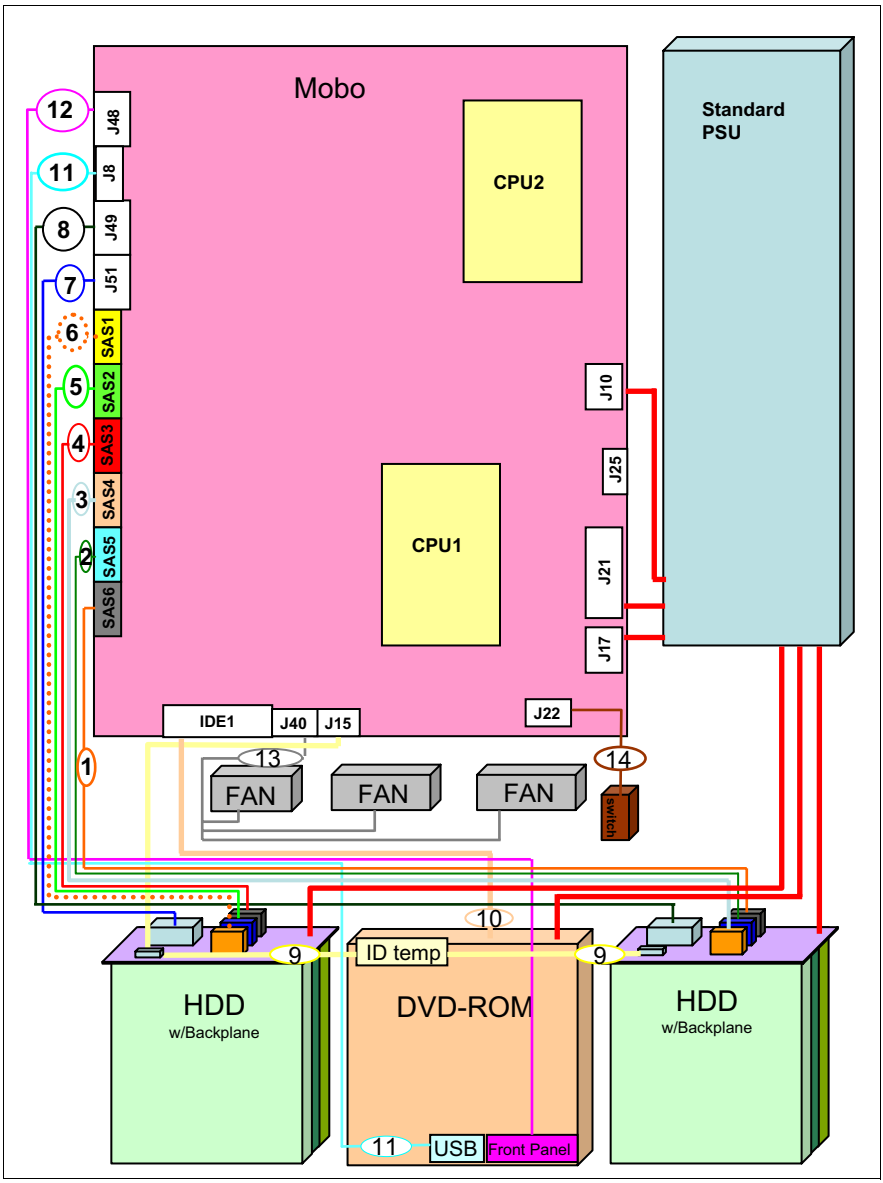

Figure 39: Cabling hot-plug

Abbreviations

AC
Alternating Current

ANSI
American National Standard Institute

ASR&R
Automatic Server Reconfiguration and Restart

BIOS
Basic Input-Output System

BMC
Baseboard Management Controller

CC
Cache Coherency

CD
Compact Disk

CD-ROM
Compact Disk-Read Only Memory

CHS
Cylinder Head Sector

CMOS
Complementary Metal Oxide Semiconductor

COM
Communication

CPU
Central Processing Unit

DC
Direct Current

DIMM
Dual Inline Memory Module

DIP
Dual Inline Package

DMA
Direct Memory Access

DMI
Desktop Management Interface

ECC
Error Checking and Correcting

ECP
Extended Capabilities Port

EEPROM
Electrically Erasable Programmable Read-Only Memory

EMC
ElectroMagnetic Compatibility)

EMP
Emergency Management Port

EPP
Enhanced Parallel Port

ESD
ElectroStatic Discharge

FPC
Front Panel Controller

FRU
Field Replaceable Unit

FSB
Front Side Bus

GAM
Global Array Manager

GUI
Graphical User Interface

HDD
Hard Disk Drive

HSC
Hot-Swap Controller

I²C
Inter-Integrated Circuit

I/O
Input/Output

ICM
Intelligent Chassis Management

ID
Identification

IDE
Integrated Drive Electronics

IOOP
Intelligent Organization of PCI

iRMC
integrated Remote Management Controller

IRQ
Interrupt Request Line

LAN
Local Area Network

LBA
Logical Block Address

LCD
Liquid Crystal Display

LUN
Logical Unit Number

LVD
Low-Voltage Differential SCSI

MMF
Multi Mode Faser

MRL
Manually Retention Latch

NMI
Non Maskable Interrupt

NVRAM
Non Volatile Random Access Memory

OS
Operating System

PCI
Peripheral Component Interconnect

PDA
Prefailure Detection and Analysing

POST
Power ON Self Test

RAID
Redundant Arrays of Independent Disks

RAM
Random Access Memory

ROM
Read-Only Memory

RSB
Remote Service Board

RTC
Real Time Clock

RTDS
Remote Test- und Diagnose-System

SAF-TE
SCSI Accessed Fault-Tolerance Enclosures

SAS
Serial Attached SCSI

SATA
Serial ATA

SBE
Single Bit Error

SCA
Single Connector Attachment

SCSI
Small Computer System Interface

SDDC
Single Device Data Correction

SDR
Sensor Data Record

SDRAM
Synchronous Dynamic Random Access Memory

SEL
System Event Log

SMI
System Management Interrupt

SSU
System Setup Utility

SVGA
Super Video Graphics Adapter

USB
Universal Serial Bus

VGA
Video Graphics Adapter

Related publications

PRIMERGY manuals are available in PDF format on the *ServerBooks* DVD. The *ServerBooks* DVD is part of the *ServerStart Suite* supplied with every server.

The PDF files of the manuals can also be downloaded free of charge from the Internet. The overview page showing the online documentation available on the Internet can be found using the URL: *http://manuals.fujitsu-siemens.com*. The PRIMERGY server documentation can be accessed using the *Industry standard servers* navigation option.

[1] **Safety notes and other important information**

[2] **Warranty**

[3] **Ergonomics**

[4] **Returning used devices**

[5] **PRIMERGY Econel 230R S1 Server**
Operating Manual

[6] **System Board D2440 for Econel 230R S1**
Technical Manual

[7] **BIOS Setup**
Reference Manual

[8] **Quick Start Hardware - PRIMERGY Econel 230R S1**
Poster

[9] **Quick Start Software - Quick Installation Guide**
Poster

[10] **PRIMERGY ServerView Suite**
ServerStart
User Manual

[11] **PRIMERGY ServerView Suite**
ServerView Installation
User Manual

[12] **PRIMERGY ServerView Suite**
ServerView S2
Server management
User Manual

[13] **PRIMERGY ServerView Suite**
ServerView
Server management
User Manual

[14] **PRIMERGY ServerView Suite**
RemoteView
User Manual

[15] **PRIMERGY ServerView Suite**
integrated Remote Management Controller (iRMC)

[16] **ServerView RAID**
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[17] **Integrated RAID for SAS**
User's Guide

[18] **LSI SATA Software RAID**
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[19] **Integrated Mirroring**
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[20] **PRIMECENTER Rack**
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[21] **DataCenter Rack**
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